Office of Energy Efficiency and Renewable Energy

World's First Gasoline-to-Fuel-Cell Power Demonstration

Background

Proton exchange membrane (PEM) fuel cells have the potential to triple the fuel economy of conventional vehicles. However, current fuel cells only operate on fuels such as hydrogen that are not universally available. A low-cost, onboard fuel processor is needed to make the fuel cell technology truly viable.

Accomplishments

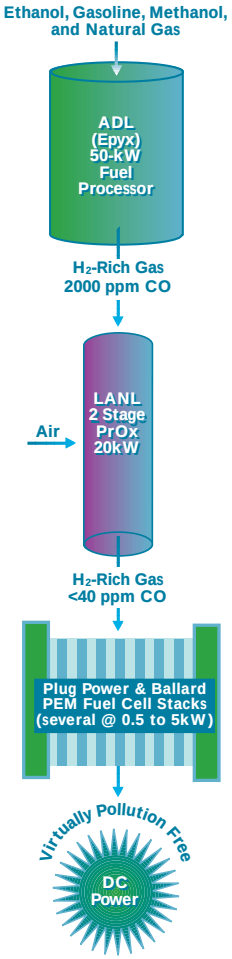
- A high-efficiency, fuel-flexible fuel processor has been developed.
- A PEM fuel cell system capable of generating electricity from a variety of fuels — including gasoline, ethanol, methanol, and natural gas — has been successfully demonstrated. The emissions from a fuel-cell powered vehicle, utilizing on-board processed fuel will be well below the U.S. Enviromental Protection Agencies proposed Tier 2 regulation.

Benefits

- Leads the way for a high-mileage, fuel-flexible, low-emission electric vehicle that can be conveniently refueled at existing gas stations.
- Criteria pollutants emitted by this system are 1/100th that of conventional vehicles.
- Reduces greenhouse gas emissions from a vehicle by 50%.
- Dramatically increases fuel economy compared to conventional gasoline-powered vehicles.
- Reduces U.S. dependence on oil.
- Requires virtually no change to existing fuel infrastructure.

Future Activities

- Develop full-scale fuel cell and processor system and demonstrate practicality, performance, and durability in a vehicle.



Fuel Cell System Producing Electricity from Gasoline, Ethanol, Methanol, and Natural Gas

- Reduce cost by developing high-volume manufacturing technologies.

Partners in Success

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OFFICE OF TRANSPORTATION TECHNOLOGIES

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